Volunteer Lake Assessment Program Individual Lake Reports

BAXTER LAKE, FARMINGTON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,439	**Max. Depth (m):**	4.6	**Flushing Rate (yr^{1})**	1.9
Surface Area (Ac.):	295	**Mean Depth (m):**	2.1	**P Retention Coef:**	0.7
Shore Length (m):	7,200	**Volume (m^{3}):**	2,452,500	**Elevation (ft):**	405

TROPHIC CLASSIFICATION

Year	Trophic class
1979	MESOTROPHIC
1995	MESOTROPHIC

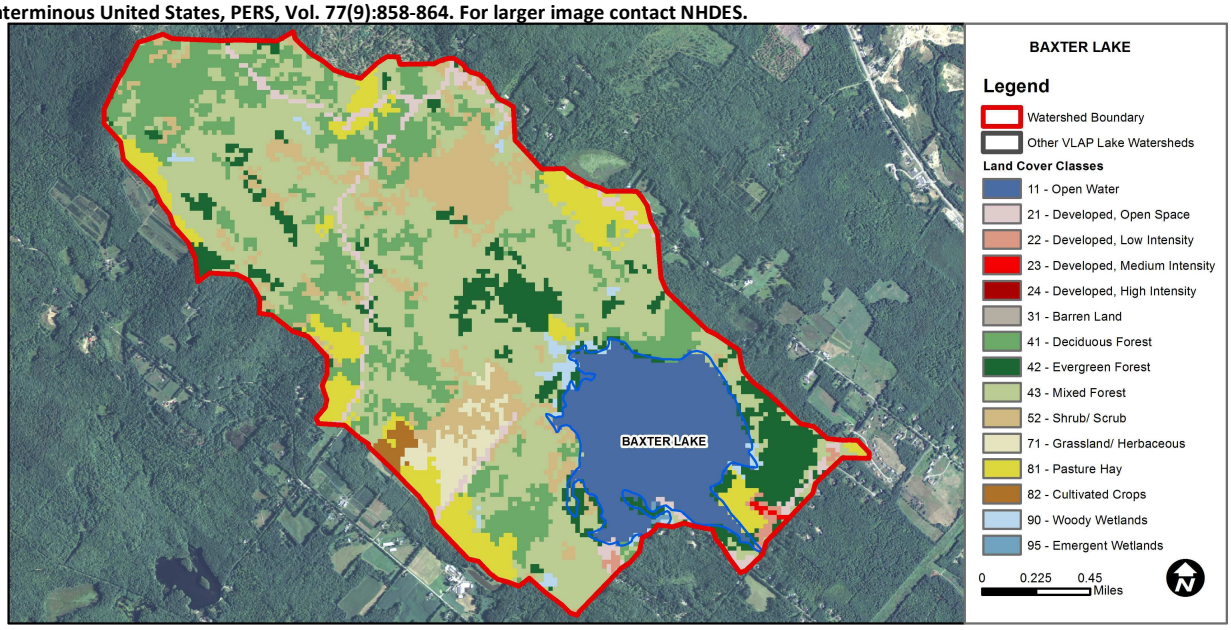
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Cautionary	The calculated median is fewer than 5 samples but > indicator and the chlorophyll a indicator is okay. More data needed.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Dissolved oxygen satura	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	12.1	Barren Land	0	Grassland/Herbaceous	1.76
Developed-Open Space	2.97	Deciduous Forest	16.84	Pasture Hay	8.1
Developed-Low Intensity	0.46	Evergreen Forest	8.75	Cultivated Crops	0.53
Developed-Medium Intensity	0.1	Mixed Forest	37.43	Woody Wetlands	1.17
Developed-High Intensity	0	Shrub-Scrub	9.71	Emergent Wetlands	0.07

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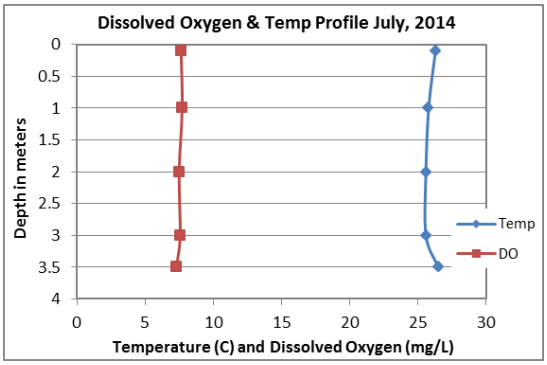
Baxter Lake, Farmington

2014 Data Summary

Observations and Recommendations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels decreased slightly from June to July and then remained stable from July to September. Average chlorophyll levels decreased slightly from 2013 and were less than the state median. Historical trend analysis indicates stable chlorophyll levels since 1999.
- **Conductivity/Chloride:** Epilimnetic (upper water layer), hypolimnetic (lower water layer), Cruze Brook, and Outlet conductivity and/or chloride levels were slightly greater than the state median but not above a level of concern. Cruze Cove conductivity levels were slightly elevated in June potentially due to iron influences. Dineen Brook conductivity and chloride levels were slightly elevated and greater than the state medians.
- **E. coli:** Beach E. coli levels were low on each sampling event and much less than the state standard of 88 cts/100 mL for public beaches.
- **Total Phosphorus:** Epilimnetic and hypolimnetic phosphorus levels were slightly elevated in June and then decreased to low levels in July and August. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Cruze Cove phosphorus levels were elevated in June. Cruze Brook, Dinneen Brook and Outlet phosphorus levels were within low to average ranges.
- **Transparency:** Transparency measured without the viewscope (NVS) was good in June, decreased slightly in July and then increased (improved) in August. Historical trend analysis indicates stable transparency since monitoring began. Transparency measured with the viewscope (VS) indicates the Secchi disk was visible on the lake bottom in June, decreased slightly in July and then increased (improved) in August.
- **Turbidity:** Deep spot turbidity was slightly above average on each sampling event however it did not impact lake transparency or clarity. Cruze Cove turbidity was elevated in June potentially due to low flow and organic matter. Cruze Brook, Dinneen Brook and Outlet turbidities were within low to average ranges.
- **pH:** Deep spot pH levels fluctuated below the desirable range 6.5-8.0 units. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years. Tributary pH levels were within the desirable range.
- **Recommended Actions:** Conductivity and chloride levels in Dinneen Brook were slightly elevated and greater than the state medians. Chloride levels indicate winter de-icing products are the likely cause. Encourage local road agents and winter maintenance companies to obtain a Voluntary NH Salt Applicator License through the UNH Technology Transfer Center's Green SnowPro Certification program. For more information visit www.t2.unh.edu/green-snowpro-training-and-certification**.** Educate local homeowners on ways to reduce salt usage on driveways and walkways. The UNH website also includes educational resources for homeowner's. Keep up the great work!



NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Table 1. 2014 Average Water Quality Data for BAXTER LAKE

Station Name	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	3.27	3.88		58.4		11	2.82	3.76	1.35	6.52
Hypolimnion				58.6		15			1.65	6.48
Beach 1					4					
Beach 2					5					
Beach 3					22					
Cruze Brook			6	63.6		13			0.66	6.67
Cruze Cove				113.8		86			2.90	6.71
Dinneen Brook			30	159.7		6			0.69	6.61
Outlet				59.4		11			1.16	6.56

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data show low variability.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.